

## **Redox transformation of chromium in ice and its environmental impact**

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Chromium is one of the most ubiquitous heavy metals, existing in a number of environments including soil, fresh water, ocean, groundwater, and atmosphere. Understanding redox chemical processes of chromium in the environment is an important issue in environmental chemistry and provides critical information about the mobility, toxicity, bioavailability, and environmental fate of chromium species. However, the redox transformation of chromium in cold environments has been rarely investigated despite their importance in the environment. We investigated the reductive transformation of Cr(VI) in ice in comparison with their counterparts in aqueous solution. We found that the reduction of Cr(VI) was significantly accelerated in ice phase compared to those in aqueous solution. The freeze concentration effect of reactants in ice grain boundaries could be the main reason for the enhanced Cr(VI) reduction in frozen state. The detailed experimental conditions and mechanism will be addressed in the presentation. We will also discuss the environmental implication and application for the enhanced redox transformation of chromium in ice.